

Frontier Platform for Crime Reporting System Pro Law Enforcement Agent

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ABSTRACT

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In a perfect society, everyone is subject to the law, and anyone discovered to have broken the law faces concrete repercussions. Members of society are typically obligated to notify the proper law enforcement agent of any instance of a breakdown in law and order. In the past, making a report of a crime in the community (Nigeria) required visiting any of the offices of the law enforcement agencies (such as the Police, neighborhood corps), which made maintaining anonymity nearly impossible. But as technology advanced, more ways to report crimes were available, from the telegraph to specialized radio transmission to dedicated phone lines, to more pervasive and responsive technical application platforms (web and mobile software applications). The goal of this study was to built a crime reporting platform for the law enforcement agent , which will allow citizens to anonymously report a crime in their community. The platform was implemented using: CSS, JAVASCRIPT, MySQL, PHP. Qualitative techniques were used to evaluate the system on its usability and ease of navigation.

Keywords: Crime, culprit, theft, security law, telegraph, society, report.

INTRODUCTION

A crime is an act that causes emotional, psychological or physical harm to people (which may result to loss of property). Crime is an offence which is punishable before the law of the state and the society is strongly against it. Crime can be done physically. Theft, fraud, robbery, murder, rape, child neglect (child abuse) and failure to pay taxes as a citizen are some examples of crimes (Adesola et al., 2019; Akinola & Ogunobi, 2015). As society grows, the complexity of human interactions increases, making crime control increasingly challenging. While regulations and laws help maintain order, they alone are insufficient; effective enforcement by legitimate authorities is crucial. These authorities not only enforce laws but also protect citizens' rights. Traditionally, crime reporting has been a manual process where citizens visit security agencies, fill out forms, and provide evidence. However, this process often discourages people from reporting crimes due to the inconvenience and lack of feedback (Athira, 2016; Archana & Saveetha, 2010). With the advent of technology, crime reporting has become more accessible. Various online platforms now allow citizens to report crimes without visiting a police station, making the process more convenient and user-friendly. Many people today have internet-enabled devices, making online crime reporting a practical option. Existing systems like the Investigation of Crime and Corrupt Practices (ICPC) and Economic and Financial Crimes Commission (EFCC) allow reporting of financial crimes but do not cover other types of crimes, such as assault, robbery, or accidents. The current crime reporting systems are limited in scope and do not meet the diverse needs of citizens. A new system is proposed that would allow reporting of all types of crimes, provide feedback via email or phone, and enable users to upload pictures and voice recordings as evidence. This would create a more comprehensive and responsive crime reporting system, addressing the limitations of existing platforms and improving public trust in the process (Eric, 2005; Falade et al., 2020; Falade et al., 2019).

RELATED WORKS

A crime is an offence which is punishable by the law and with the right consequences. A crime causes a lot of harm. A crime is an act that causes emotional, psychological or physical harm to people (which may result to loss of property). Crime is an offence which is punishable before the law of the state and the society is strongly against it (Falade et al., 2022; Nicholas et al., 2019). Crime can be done physically. Theft, fraud, robbery, murder, rape, child neglect (child abuse) and failure to pay taxes as a citizen are some examples of crimes. A crime is an illegal act. A crime can be done intentionally, as retaliation or by a mistake. The gathering and generating of crime reports using information management system is done by following some particular procedures, processes and facilities is known as "A crime reporting system". A crime is an act of doing wrong thing at a wrong time which has a consequence of a punishment usually by way of payment of fine or imprisonment. Before passing any judgement on a criminal, investigations must be done and it will be agreed on by the official leaders (Nnadimma, 2018; Oludele et al., 2015). There are numerous examples of crime but a few will be listed: Theft, fraud, robbery, murder, rape, child neglect (child abuse), kidnapping and failure to pay taxes as a citizen.

History of crime

The study discusses the implementation and benefits of an online crime reporting system, emphasizing its utility for both residents and law enforcement. This system allows individuals to report crimes without visiting a police station, thereby reducing the stress associated with manual reporting. Users must register on the website using identification, after which they can submit reports on various crimes, including missing persons or property. Upon submission, users receive confirmation of their report, eliminating the need for in-person visits to police stations. The system also allows for communication between the police and users, enhancing the reporting process (Priya, 2019).

The study outlines the types of crimes suitable for online reporting, noting that police departments typically decide which incidents can be reported online. Generally, non-violent property crimes are preferred for online reporting, as they often lack known suspects. Violent crimes, such as assaults, are discouraged from being reported online due to the need for immediate police intervention. The balance between the convenience of online reporting and the potential loss of physical evidence, such as fingerprints, is a consideration for police management. The importance of thorough crime reporting is highlighted, as it provides police with essential information about incidents in specific areas, especially when officers are not present. The document argues that crime rates are influenced by economic development, suggesting that high crime rates can hinder societal progress. The proposed online crime reporting system aims to alleviate fears associated with reporting crimes, as many individuals hesitate to report due to concerns about personal safety or the perceived ineffectiveness of the police. The system is designed to be user-friendly, allowing citizens to report crimes from anywhere with internet access. This accessibility is crucial, as distance and the fear of retaliation often prevent victims from reporting crimes. By enabling online reporting, the system aims to empower citizens and ensure that more crimes are documented and addressed.

Security concerns regarding online reporting are addressed, noting that police reports are generally considered public information. However, personal data, such as addresses and social security numbers, should be protected within secure networks. IT departments are responsible for implementing security measures, including firewalls, to safeguard sensitive information. The document suggests that online reports can be stored on network servers, allowing for easy access and tracking of cases. The handling of crime reports involves managing investigations and utilizing records effectively for public safety. This includes monitoring crime trends and integrating methods to enhance service delivery, encouraging victims to report incidents (Simon, 2018; Okolie et al., 2019). The document emphasizes the need for professional policing and effective methods to prevent manipulation of recorded information.

The online crime reporting system is seen as a significant advancement in law enforcement, facilitating better communication between the public and police. It allows for the submission of various forms of evidence, including digital files, photographs, and descriptions of incidents. This technology enables police to respond more quickly to reported crimes, even in areas where officers are not physically present. The study advocates for the adoption of an online crime reporting system as a means to improve crime documentation and response. By making reporting

more accessible and secure, the system aims to foster a safer community and encourage citizens to take an active role in crime prevention. The integration of technology in policing is presented as a vital step toward enhancing public safety and ensuring that law enforcement can effectively address crime in society.

The factors influencing causes of crime in the society

Crime is caused by so many factors surrounding the student or individual, no student or individual is born to be a criminal or as a criminal but it is because of the situation and conditions around them. Below are the causes of crime:

- Social causes
- Economic causes
- Psychological causes
- Biological causes
- Geographical causes

Filling a Complaint Form on a Crime Reporting System

It is simple to submit a crime or incident report online. The police department's Internet website provides access to the form for the student who needs to submit a report. The report form will be preceded by a series of instructions outlining the many types of reports that can be made and explicitly warning that the system is not for emergency situations or currently-active crimes, but rather for "cold" crimes, or crimes that have already been completed. This form can have mandatory fields for identifying data like name, address, and date of birth. A notice that lists the consequences of filing a fraudulent report may also be present. After the report has been submitted online, police officers can download the form and verify that it complies with the department's guidelines for the acceptable types of incidents to record. The report can be given a case or file number, after which the form can be printed and submitted to the agency's records section. Even though there are numerous societal and personal advantages to reporting crime, it happens frequently. There are several reasons why crime is not reported by witnesses and victims. Fear of consequences, embarrassment or shame, thinking the offense is too little or a private matter, thinking that reporting will not change anything, and not being able to contact an authority figure are among the reasons frequently given (Smith, 2005; Tayal et al., 2015; Akinola & Odumosu, 2015).

Existing Systems

Below are examples of online crime reporting system:

IC3: Internet crime complaint center (IC3) is a crime reporting platform that deals with fraudulent activities and robbery i.e. it gives members of a society the opportunity to report crime based phishing, card fraud, hacking etc. Victims can report internet crime for their selves and students can also report fraud crimes on behalf of other individuals in the student. A complaint form is on the website where you can easily input the following:

- Crime victim information
- Account transaction information and recipient account details
- The website that was used for fraud
- The name and contact information of the criminal
- Crime details
- Email address

EFCC: Economic and financial crime commission is a crime reporting platform that deals with fraudulent activities and robbery i.e it gives members of a society the opportunity to report crime based phishing, card fraud, hacking etc. Victims can report internet crime for their selves and students can also report fraud crimes on behalf of other individuals in the student. The main vision of EFCC is to eradicate financial and economic crimes in Nigeria

through prevention, co-ordination and enforcement. The main functions of the Economic and financial crime commission include: The investigation includes money launder, making counterfeit money, illegal fund transfers, market fraud, contract scam etc.

ICPC: ICPC stands for Independent Corrupt Practices and Other Related Offences Commission. ICPC is also a crime reporting platform that deals with fraudulent activities and robbery i.e it gives members of a society the opportunity to report crime based phishing, card fraud, hacking etc. Victims can report internet crime for their selves and students can also report fraud crimes on behalf of other individuals in the student. It is a legal body vested by law (Government) with the responsibility to fight corruption and other related offenses in Nigeria. Their responsibility is to receive complaints from students and to give feedback to students.

Limitations of Existing System

Most crime reporting platforms suffer from these limitations;

- **Geographic Variation:** Crime reporting habits and law enforcement methods might range significantly among geographical regions, resulting in unequal data representation and difficulties in drawing reliable conclusions from comparisons between regions.
- **Changes in Reporting Behavior:** Over time, cultural views, law enforcement methods, and public awareness campaigns can all have an impact on reporting behavior, making it difficult to assess long-term patterns.
- **Language and cultural limitations** can affect how crimes are reported in communities with a variety of cultures. This may result in variations in reporting rates according to cultural norms, linguistic ability, and ethnicity.
- **Data Availability:** Due to the difficulties in detecting and reporting some crimes, such as white-collar crimes or cybercrimes, official crime statistics may underreport these crimes.
- **Time lag:** There might be delay between the occurrence of a crime and reporting to authorities. The precision of temporal analysis and trend identification may be affected by these delays.
- **Data quality:** Data completeness and accuracy can vary. The accuracy of the statistics may be impacted by errors in recording, incorrect categorization of offenses, and inconsistent reporting standards across law enforcement authorities.

The Modules of some existing Systems

FIR Module: The kind of the case and a detailed description should be included in the FIR registration form. The user has the option to choose which Police station his or her FIR should be sent to. When filing a FIR, the user has the option of uploading any supporting documents or photographs that will serve as case evidence. It includes information such as the date, police station where the incident was reported, location, crime's nature, and more (Figure 1, 2). The relevant police station will receive the case information. The FIR will be seen by the police station administrator, who should then take the appropriate action (Tomas et al., 2019).

Landing page: This is the welcoming page for every new user.



Figure 1: Landing Page of the implementation

Login/Notification Module: Users are able to preserve and keep an eye on the case assignments for the investigating police thanks to this. Accessible case status information for making decisions on a special topic. This will be adequate to eliminate the need of paper forms, and putting this system in place will raise the likelihood of assignments, make problems easier to solve, and make progress much more likely.



Figure 2: A registered user page of the implementation

Case Report Module: This module allows us to analyze the police station processing and crime reporting rates. Additionally, we can examine the legal actions brought against each category in specific places. From the data set providers, we received a sizable data set regarding crime in India. Additionally, we have formatted the Report as a chart to provide a visual depiction of the case details.



Figure 3: The administrator's Page of the implementation

The Proposed System

The major reason for creating this proposed system is to create a website with improved qualities like reporting more than one crime. My proposed system quality will be above the quality of other existing system. Manual work reduction will be available and more security when it comes to reporting crime with the proposed system. The proposed system will ensure the protection of data, better service, greater efficiency, user friendly and interactive.

METHODOLOGY

System Analysis

The term "system" in the context of system analysis refers to a group of parts or elements that cooperate to fulfill a single goal or purpose. A business process, a software system, an organization, or even a mix of these things, could be the culprit. System analysis is researching and comprehending these systems in order to pinpoint their needs, examine their design and behavior, and suggest modifications or fixes. Various methods of reporting crime have been introduced in our environment. It involves going to the nearest police station and reporting crime online but with negative response. An online crime reporting system that accepts the report of more than one crime have not been developed by any student. The proposed approach is designed to bring about a quicker and more accurate method of reporting crime online in university. The online crime reporting system differs from previous crime reporting systems, it is quicker, more accurate, more scalable, stable, completely eliminates the stress of going to police stations and reporting crime without getting feedback (Stuart, 2017). The most appropriate forms of reporting for online systems are property crimes with no known suspects. Victims can report internet crime for their selves and students can also report fraud crimes on behalf of other individuals in the student (Johnson, 2014).

System Architecture

In order to make the reporting, recording, and management of crime-related incidents easier, an online crime reporting system often consists of several components. An overview of an online crime reporting system's typical architecture is provided below:

User interface: Users can access the system and report crimes via the user interface of a web application or mobile app. It offers a simple interface for entering pertinent data and reporting crime.

Identifier verification and authorization

- User authentication: Using username/password combinations, two-factor authentication, or other authentication techniques, the system confirms the users' identities.
- Authorization: To guarantee proper access control, several user roles and permissions are defined. For instance, compared to average users, law enforcement professionals might have more privileges.

Data entry and reporting of crimes:

- Reporting an Incident: Users can provide information about the crime they wish to report, including the kind of offense, the location, the date, the time, a description, and any supporting materials (such as pictures or videos).
- Data Validation: To make sure the data is accurate and comprehensive; the system runs validation tests on it.

Backend services: To save and retrieve information on crimes, a database is needed. This can be a relational database management system like MySQL or PostgreSQL.

i. Managing report

- Case Management: After a report of a crime is submitted, it is given a special identification number and kept in the database. Police officers have access to reported cases and can manage them, assign investigators, monitor their progress, and update the status of their investigations.
- Workflow and Escalation: The system might provide features for automating case assignment, elevating serious issues, or monitoring response times.

ii. Security

- Secure Communication: To safeguard data transmission between users and the system, the system should use secure communication protocols (such as HTTPS).
- Sensitive data should be encrypted both in transit and at rest, such as user credentials or personally identifying information.
- Access Control: To prevent unwanted access to the system and its data, strict access control mechanisms should be put in place.
- Auditing and logging: Extensive logging and auditing techniques can support forensic investigation when necessary, track system usage, and identify potential security breaches.

SUMMARY OF DATA FROM POLICE HEAD OFFICE FROM JANUARY TILL DATE (JUNE 10, 2023)

Table 1: Fieldwork 2022

MONTHS	Theft	Robbery	Rape	Murder	Child abuse
January 2023	2	7	Null	3	1
February 2023	7	9	2	2	Null

March 2023	9	10	1	8	Null
April 2023	11	2	Null	5	2
May 2023	6	1	2	2	Null
June 2023	1	Null	Null	6	1
Total	38	29	5	26	4

Table 2: User case table statement of a student

S/N	STUDENT ACTION	SYSTEM ACTION
1.	Sign Up/Login	Validates the User Login Details
2.	Report a Crime Incidence	Accept and Submit the Report
3.	Log out	Null
4.	Wait for Response	Send a Notification

Table 3: Usecase table statement of the security or super admin

S/N	SUPER ADMIN/SECURITY ACTION	SYSTEM ACTION
1.	Login	Validate the Log in Details
2.	Review the Report	Commit Changes
3.	Comment on The Report via the official G-mail or website	Send a Response
4.	Close the Incidence	Commit the Changes
5.	Log Out	Logs you Out

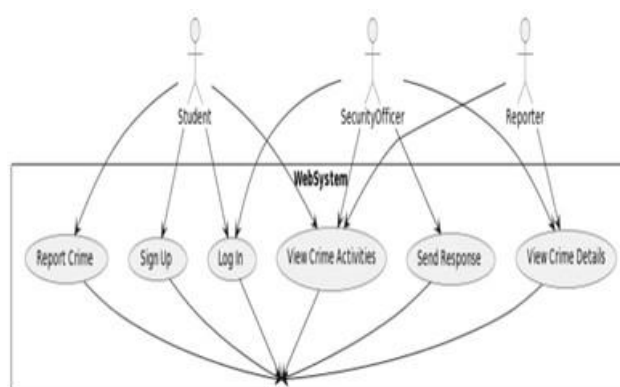


Figure 4: Use case Diagram showing how users interact with the crime reporting system

Class Diagram

A class diagram (Figure 5) is a structural representation of the system's classes, together with each class's properties, methods, relationships with other objects, and restrictions that the system must adhere to. The class diagram, which is used for visualizing, describing, and documenting various system components as well as for producing executable code for software applications, is the most typical UML diagram that can be immediately translated to object-oriented programming languages. By outlining the items and classes that make up the system as well as their relationships with one another, a class diagram gives a general overview of the intended system. The list of system classes is displayed below, including the task list (also known as a to-do list), lectures (also known as classes), projects, contacts, and assignments.

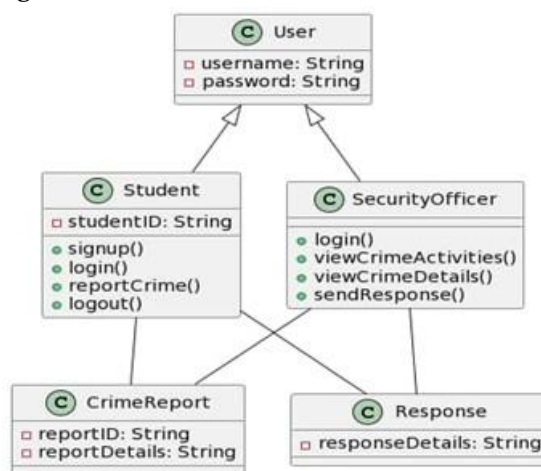


Figure 5: Class Diagram showing users interaction with the online crime reporting system

Sequence Diagram

The sequence diagram (figure 6) is used to represent the sequential communication or interaction of items. They are interaction diagrams that describe in great detail how actions and processes take place. The flow diagram depicts interactions between the system and other systems, as well as between the system and the user. One of the main applications of a sequence diagram is the progression from requirements stated as use cases to the next, more formal level of elaboration. A sequence diagram or more can be created from a use case by refining it.

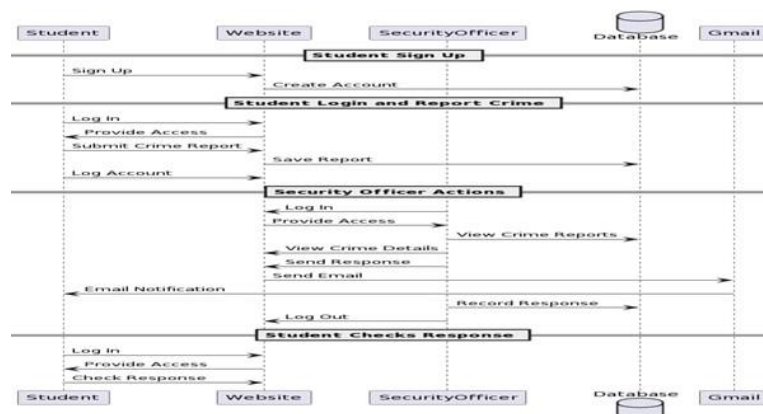


Figure 6: Sequence Diagram showing Administrator interaction with the crime reporting system

Activity Diagram

An activity diagram (figure 7) in UML (Unified Modeling Language) is a form of behavioral diagram that graphically depicts the flow of activities and actions within a system or a process. The phases of a certain process, workflow, or use case can be modeled in software development projects. They provide step-by-step examples of the practices, choices, and activities that support concurrency, iteration, and choice. To describe the workflow, specific shape types are often used in activity diagrams. An activity diagram is a flowchart that illustrates how one system operation changes into another. It is employed to draw attention to the system's dynamic properties and record the system's dynamic activity. In order to create an executable system, it also uses forward and reverse engineering techniques.

- Oval: For starting or terminating a work flow
- Diamond: They represent decisions.
- Rectangle: They represent actions
- Arrow: It indicates the directional flow
- Diagonal: For input and output
- Circle: The circle is usually colored black and it represents the start state or initial state of the workflow. An encircled circle represents the final state.

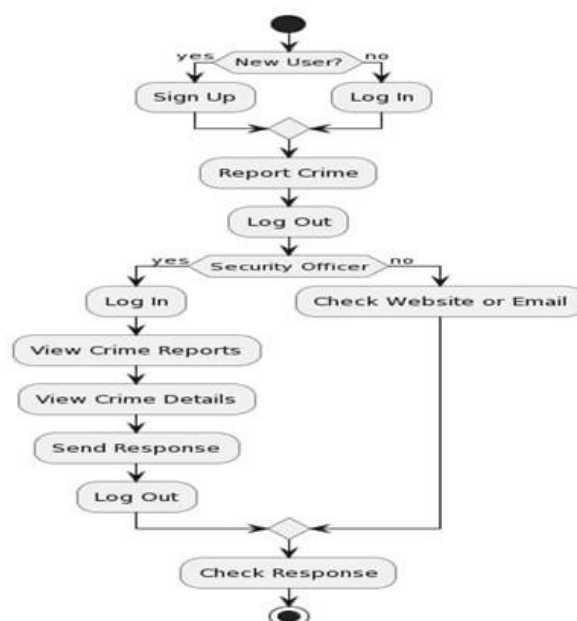


Figure 7: Activity Diagram for the online crime reporting system

Conceptual design

Conceptual design is the first stage of the design process, during which ideas, concepts, and high-level plans are created to meet a specific issue or opportunity. Before diving into specific planning and implementation, this is the stage where the project's overarching vision and objectives are established. The basis of the project is laid with conceptual design, which also acts as a roadmap for later phases.

Description of tables

A database is a well-organized grouping of relevant material. A database is another name for an electronic system that enables data to be stored, retrieved, modified, and updated. The database management system is used to manage databases. In order to define, manipulate, retrieve, and manage the data in a database, a database management system (DBMS) is used. A DBMS offers data independence and allows for changes without affecting the program as a whole. The database management systems MySQL, SQL Server, Oracle, Dbase, and FoxPro are a few examples.

A relational database management system (RDBMS) is a form of database management system in which data are arranged as logically separate tables and it has features that keep the security, dependability, and consistency of the data. MySQL has been used as the relational database management system in this system.

RESULT AND DISCUSSION**Software Requirements**

The project's software requirements go into great depth on the functionalities, features, and constraints that the software application must adhere to in order to meet the project's objectives and the needs of its users. These standards serve as the foundation for the software development process' design, implementation, testing, and deployment phases. The following is a breakdown of the key components of a project's software requirements

Table 4: Comprises of all the software requirements

REQUIREMENTS	SOFTWARE
Operating System	Windows 10
Development tools	Xampp
Database Maagement System	MySQL
Programmig language	JavaScript, CSS, PHP

Implementation Tools Used

A software development tools or application are tools that helps programmers create, test, and manage software projects. These tools offer features and functionalities that speed up the software development process, increase productivity, and raise overall software quality. The tools used to implement this project are: CSS, JAVASCRIPT, MySQL, PHP.

Program modules and interfaces**Home page**

The homepage is also referred to as the landing page (Figure 9). The Homepage is the first page of the system; it is the first page that is being displayed when the website is launched. When a visitor accesses a website's domain, the home page is frequently the first page they see. It acts as the primary portal into the website and is crucial in creating a favorable first impression with visitors. The website's goal should be clearly communicated on the front

page, along with links to key resources and suggestions for further exploration. The following are essential elements and ideas for creating a captivating home page:

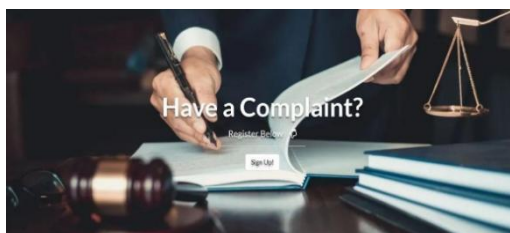


Figure 9: The landing page

The official page

The official page (Figure 10) consists of the police login, in charge login and the admin page. Each security personnel can login with their details. The admin is the overall head who can also work on the localhost.



Figure 10: The official page

Signup / Registration page

An essential component of a website that enables users to register and become members is the signup page (Figure 11). In order to establish an individual user profile, this page normally gathers user data and login credentials. This is the students/users register him or herself in order to report crime. The details can also be edited, updated and deleted directly from the module.

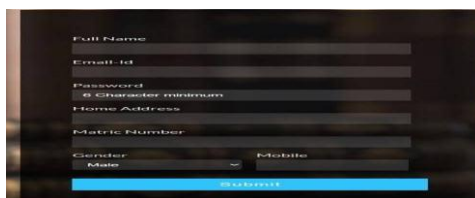


Figure 11: The signup/registration page

Login page for police, admin, in charge (police station) and student

A login page (Figure 12, 13,14,15), which enables visitors to verify themselves by giving correct credentials before viewing restricted or personalized material, is an essential part of a website. It is a crucial component of user identification and security. They help the various users to access their dashboard. They also act as a form of security measure so their accounts are not accessible to everyone.



Figure 12: The login page for police

Research Article



Figure 13: The login page for admin



Figure 14: The login page for in charge (police station)



Figure 15: The login page for students

Crime report page

The crime report page (figure 16) displays a form where the students reports the crime incident and fill all the necessary information needed.



Figure 16: The crime report page

The police log-on page

This page (Figure 17) allows the security officer to add or delete police station. The form details comprise of Police Station Location, In charge Name, In charge Name and password.



Log Police Officer

Police Name
Police Name

Police Id
Police Id

Specialist
Specialist

Location of Police Officer
Location

Password
Password

Submit

Figure 17: The police log-on page

The police station log-on page

This page (figure 18) allows the administrative personnel to add or delete a police officer. The form details comprise of Police name, police ID, specialization, location of police and password.



Log Police Station

Police Station Location
Station Location

Incharge Name
Incharge Name

Incharge Id
Incharge Id

Password
Password

Submit

Figure 18: The police station logon page

The police complaint ID

This page is where the admin or security personnel can view all report that was assigned to him or her, the police officer then check to see crime details and give possible response via the website / email address or the phone number that was submitted.



Complaint Id	Type of Crime	Date of Crime	Location of Crime	Action
8	Molestation	2023-05-03	Sport Center	Check
7	Murder	2023-08-04	School	Check
6	Robbery	2023-04-09	School Park	Check
4	Molestation	2023-08-22	Sport Center	Check

Figure 19: The police complaint id page

A registered user complaint history page

This page (figure 19 and 20) enables a registered user to go through his or her complaint history. The user gets to see his or her ID in order to track his or her complaint or make reference to it.

<div> <input type="text" value="Complain Id"/> <input type="button" value="Search"/> </div>			
Complain Id	Type of Crime	Date of Crime	Location of Crime
3	Molestation	2023-08-20	Hostel
2	Robbery	2023-08-20	Library

Figure 20: The registered user complaint history page

CONCLUSION

The design and implementation of an online crime reporting system can significantly improve the effectiveness of community safety and law enforcement initiatives. With the use of such a system, law enforcement organizations and the general public can work together to prevent and report crime. This method gives people the power to actively take part in preserving a safer society by offering a convenient and accessible platform for reporting crimes and suspicious activity.

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